

Claims 1-10 are now pending in the application, with Claims 1, 6 and 10 being independent. Claims 1 and 6 have been amended and Claims 7-10 have been added herein.

It is respectfully submitted that support for the amended claims and the newly-presented claims can readily be found in the specification. For example, support for the terminology “plasticizing” can be found with regard to Example 2 described at pages 16 and 17 of the specification. Support for the range of the surface roughness in Fig. 6 can be found at page 8, lines 5-9. Support for Claim 7 can be found at page 8, lines 23-25, that for Claim 8 at page 9, lines 2-6, and that for Claim 9 at page 10, line 14 through page 11, line 14. Of course, the claims are not intended to be limited in scope to these preferred embodiments.

Claim 6 was rejected under 35 U.S.C. § 102 or § 103 as being anticipated by, or obvious over, U.S. Patent No. 4,521,785 (Matsufuji). Claims 1, 4 and 6 were rejected under 35 U.S.C. § 103 as being obvious over U.S. Patent No. 5,306,381 (Nakazawa et al.) in view of U.S. Patent No. 5,521,002 (Sneed), U.S. Patent No. 4,865,675 (Yamamoto et al.) and U.S. Patent No. 5,364,702 (Idei et al.). Claims 2 and 3 were rejected under § 103 in further view of U.S. Patent No. 5,750,200 (Ogawa et al.). Claim 5 was rejected under § 103 in further view of U.S. Patent No. 4,864,324 (Shirota et al.). These rejections are respectfully traversed.

As is recited in independent Claim 1, the present invention relates to a process for forming images including the step of conducting recording on a recording medium provided with an image-receiving layer. The image-receiving layer contains

particles having a diameter of 0.1 to 10 μm for imparting a matted appearance to the surface of the image-receiving layer. The process further includes the steps of laminating a laminating film comprising a thermoplastic film without a backing layer onto the image-receiving layer and plasticizing and smoothing the surface of the thermoplastic film that is opposite to the surface in contact with the image-receiving layer with heating and pressurizing means to bond a back side of the thermoplastic film onto the image-receiving layer.

As is recited in independent Claim 6, the present invention relates to an apparatus for forming images, which include an ink-jet head for recording on a recording medium, a laminate section for laminating a laminating film comprised of a thermoplastic film without a backing layer onto the recording medium on which recording has been conducted and heating and pressurizing means for plasticizing and smoothing the thermoplastic film by heating and pressurizing and bonding a back side of the thermoplastic film onto an image-receiving layer of the recording medium. The surface roughness (R_a) of the surface of the heating and pressurizing means that comes into contact with the thermoplastic film is $3\mu\text{m}$ or less.

As is recited in independent Claim 10, the present invention relates to a process for forming images including the steps of conducting recording on a recording medium provided with an image-receiving layer, laminating a laminating film comprising a thermoplastic film onto the image-receiving layer and plasticizing and smoothing the surface of the laminating film that is opposite to the surface which comes into contact with

the image-receiving layer with heating and pressurizing means to bond a back side of the thermoplastic film onto the image-receiving layer.

Matsufuji relates to an image forming device using both a recording medium and a transfer-receiving member. As understood by Applicants, Matsufuji does not provide a protective layer on ink-jet recorded images, but rather applies ink to the recording medium, which comprises an ink receptive layer laminated on a substrate, and then transfers the ink receptive layer to the transfer-receiving member and removes it from the substrate to obtain transferred images. As seen in Fig. 3 of Matsufuji, the image surface of the final product is the ink-receiving (coated) layer 3. As discussed at col. 3 beginning at line 60, the body 7 of the transfer-receiving member 5 is composed of a material such as semi-transparent to transparent glass or resin. Further, as discussed at col. 4, lines 21-35, another tacky layer as a seal material can be provided on the surface of the body 7 opposite to a tacky layer to adhere to any member.

Accordingly, Applicants submit that there is no disclosure or suggestion in Matsufuji of heating and pressurizing means for plasticizing and smoothing a thermoplastic film by heating and pressurizing and bonding a back side of the thermoplastic film onto an image-receiving layer of a recording medium, as is recited in independent Claim 6. Moreover, Matsufuji does not disclose or suggest that the surface roughness (Ra) of the surface of the heating and pressurizing means that comes into contact with the thermoplastic film is 3 μm or less, as is also recited in independent Claim 6.

Thus, Matsufuji fails to disclose or suggest important features of the present invention recited in independent Claim 6. Reconsideration and withdrawal of the § 102/103 rejection under Matsufuji are respectfully requested.

Nakazawa et al. describes a laminating apparatus using a two-layer laminate film in which a heat-fusible adhesive is applied on an upper or lower surface of a transparent film, as discussed at col. 12, lines 46-52. As understood by Applicants, in Nakazawa et al., the temperature of heat means is controlled to such a range that the heat-fusible adhesive is satisfactorily fused, and the heating temperature of a heating and pressurizing roller has to be controlled dependent upon the thickness of the laminate film and the image density of the image to be laminated.

Applicants further submit that there is no teaching in Nakazawa et al. regarding the composition or physical properties of the base layer of the laminate film, nor any teaching regarding the relationship between the heating temperature and the material or fusion temperature of the surface resin of the laminate film. Nor is there any suggestion of the heating and pressurizing roller in Nakazawa et al. as having a flat surface. Nakazawa et al. merely teaches that heating fuses the heat-fusible adhesive to effectively bond the laminate film with a recording material.

Accordingly, Nakazawa et al. fails to disclose or suggest laminating a laminating film comprising a thermoplastic film without a backing layer onto an image-receiving layer, and plasticizing and smoothing a surface of the thermoplastic film that is opposite to the surface in contact with the image receiving layer with heating and

pressurizing means to bond a back side of the thermoplastic film onto the image-receiving layer, as is recited in independent Claim 1.

Nor does Nakazawa et al. disclose or suggest heating and pressurizing means for plasticizing and smoothing a thermoplastic film by heating and pressurizing and bonding a back side of the thermoplastic film onto an image-receiving layer of a recording medium, with the surface roughness (Ra) of the surface of the heating and pressurizing means that comes into contact with the thermoplastic film being 3 μm or less, as is recited in independent Claim 6.

Furthermore, there is no disclosure or suggestion in Nakazawa et al. of the steps of laminating a laminating film comprising a thermoplastic film onto an image-receiving layer, and plasticizing and smoothing the surface of the laminating film that is opposite to the surface which comes into contact with the image receiving layer with heating and pressurizing means to bond a back side of the thermoplastic film onto the image-receiving layer, as is recited in independent Claim 10.

Thus, Nakazawa et al. fails to disclose or suggest important features of the present invention recited in the independent claims.

Sneed describes a matte type ink jet film using fillers to provide surface texture. The fillers should have a particle size of 0.1 to 25 microns. However, Sneed is not believed to remedy the deficiencies of Nakazawa et al. noted above with respect to the independent claims.

Yamamoto et al. describes a hot pressure adhesion treatment process and apparatus for imparting glossiness to images using a transfer releasable laminate film.

Such a laminate film has been used in the prior art and results in undesirable waste and high cost. Applicants submit that since the laminate film in Yamamoto et al. is of a transfer releasable type, there would be no plasticizing of a resin on an image surface by heating and pressurizing. Yamamoto et al. is not believed to remedy the deficiencies of the citations noted above with respect to the independent claims.

Idei et al. relates to an ink jet recording medium for use with aqueous inks and suggests that a sheet may be imparted with surface smoothness by heating the sheet by super calender, gloss calender and the like and/or passing the sheet through a pressure roll nip. However, Applicants submit that this calendering processing in Idei et al. is for a recording medium but would not be used by those skilled in the art in a heating and pressurizing treatment in a lamination process.

Ogawa et al. relates to an ink jet recording sheet in which a 75° gloss of an ink-receiving layer is preferably 80% or more (JIS-Z8741). However, this is the gloss of an ink-receiving layer, not of a surface of heating and pressurizing means. Further, there is no suggestion in any of the citations that adjusting the surface glossiness of the heating and pressurizing means can control the glossiness of the surface that comes into contact with the heating and pressurizing means. Regardless, Ogawa et al. is not believed to remedy the deficiencies of the citations noted above with respect to the independent claims.

Shirota et al. relates to a color image forming method and its ink and discloses a laminate film composed of a plurality of layers. Nevertheless, Shirota et al. is not believed to teach those features of the independent claims noted above as lacking in the previous citations.

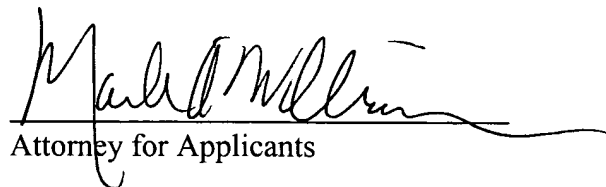
Thus, independent Claims 1, 6 and 10 are patentable over the citations of record. Reconsideration and withdrawal of the § 103 rejections are also respectfully requested.

For the foregoing reasons, Applicants respectfully submit that the present invention is patentably defined by independent Claims 1, 6 and 10. Dependent Claims 2-5 and 7-9 are also allowable, in their own right, for defining features of the present invention in addition to those recited in their respective independent claims. Individual consideration of the dependent claims is requested.

Applicants submit that the present application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Twice Amended) A process for forming images comprising the steps of:

conducting recording on a recording medium provided with an image-receiving layer, the image-receiving layer containing particles having a diameter of 0.1 to 10 μm for imparting a matted appearance to the surface of the image-receiving layer; [and]

laminating a laminating film comprising a thermoplastic film without a backing layer onto the image-receiving layer; and

plasticizing and smoothing [a] the surface of the thermoplastic film that is opposite to the surface in contact with the image-receiving layer [by] with heating and pressurizing means to bond a back side of the thermoplastic film onto the image-receiving layer.

6. (Twice Amended) An apparatus for forming images comprising:
an ink-jet head for recording on a recording medium;
a laminate section for laminating a laminating film comprised of a thermoplastic film without a backing layer onto the recording medium on which recording has been conducted; and

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heating and pressurizing means for plasticizing and smoothing the thermoplastic film by heating and pressurizing and bonding a back side of the thermoplastic film onto an image-receiving layer of the recording medium, wherein the surface roughness (Ra) of the surface of said heating and pressurizing means that comes into contact with the thermoplastic film is $3\mu\text{m}$ or less.

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